



# R.C.A. INSTITUTES.

INC.  
formerly  
MARCONI INSTITUTE  
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## Technical Lesson 26

### MID-TERM EXAMINATION

1. Is the filament temperature of a radio vacuum tube important? Why?
2. Explain briefly the effect when a grid leak of improper value is used. Name a symptom which would indicate grid trouble.
3. What device can be used to control the flow of alternating current?
4. What would happen if you accidentally used an ammeter as a voltmeter?
5. What is meant by the pitch of a tone?
6. Explain the object of "coupling" in a radio receiver.
7. Describe self induction.
8. What is the effect of charging a lead storage cell in the wrong direction?
9. Describe the construction of the Edison cell.
10. Draw simple circuit diagrams of 3 types of motor generators and explain the circuits briefly.
11. What is the function of a starting box? How is it constructed? Give diagram.
12. What is the purpose of a step-up transformer? A step-down transformer?
13. Is mutual induction a form of electromagnetic induction?
14. What are the advantages of the dry cell in radio work?
15. How many ohms resistance is required to allow exactly 10 amperes to flow in a circuit having an electromotive force of 120 volts?
16. Explain what you can of the phenomenon taking place when an unmagnetized piece of soft iron is brought near a permanent magnet.
17. Can you make a permanent magnet from a piece of soft iron?

18. Name a simple method of determining the direction of current by its chemical effects.
19. Tell what you can of the Edison effect.
20. (a) What effect has the grid upon the electron emission when it becomes highly negative? (b) Positive?
21. Show another way of expressing  $2\pi$ .
22. What is a Voltmeter and how is it used?
23. What is a Sine Curve? Show how it is constructed.
24. (a) Show by diagram a continuous wave. (b) A modulated wave.  
(c) A damped wave.
25. Show by diagram two forms of Inductance.
26. Show by diagram the construction of a simple condenser.
27. What instrument should be used to determine the state of charge of the Edison cell?
28. How would you adjust your motor for slower speed?
29. Show by diagram the E.M.F. and current in phase.
30. Draw a fundamental circuit of a rotary converter.
31. Does the field about a current carrying conductor cease to expand when the current flow becomes steady?
32. Is platinum as good a conductor as copper?
33. What electromotive force is necessary to force 2.2 amperes through a resistance of 55 ohms?
34. Are electrons considered as being positive charges or negative charges?
35. Suppose a voltmeter and an ammeter are connected in a direct current circuit. The voltmeter reads 125 volts and the ammeter reads 20 amperes. State in terms of watts the power being expended in the circuit.
36. Tell how you would determine the polarity of a helix.
37. What effect does gas have upon the electron emission?
38. Show by diagram and explain two methods of grid biasing.

39. What instrument may be used in connection with an oscillatory circuit to determine resonance?
40. What is your understanding of the term "Damping Factor"?
41. Of what advantage is an underground antenna system? Has it any disadvantages?
42. If you had to demonstrate the idea of tuning, how would you proceed?
43. What is the total capacity of five condensers in series, each having a capacity of 0.001 micro-farads?
44. How, by the readings of the voltmeter, can you determine the condition of a storage battery or any one cell of this battery?
45. What are the points of difference between the Edison cell and the lead acid cell?
46. How would you use a soft carbon brush on the commutator of a motor or generator?
47. How are generators classified?
48. What is meant by the term, "Low tension side of a transformer"?
49. There are two elements in a dry cell, Carbon and Zinc. Which is decomposed more rapidly through chemical action?
50. What is an Insulator?
51. Draw an electrical circuit showing three resistances, one of 5 ohms, one of 10 ohms, and one of 15 ohms connected in series to a battery of three cells.
52. What is another name for magnetic oxide of iron?
53. An Electromotive Force of 125 volts is being applied to an electrical circuit in which we have three electrical devices having a total resistance of 350 ohms. What current will flow in the circuit?
54. How can an electromagnet be constructed?
55. Where is the Sangamo ampere hour meter employed aboard ship?
56. To what does the word "Sound" apply?
57. Show by diagram the construction of a telephone receiver. Explain its function.

58. Show by diagram a closed core transformer with magnetic leakage gap.
59. Tell how you would test a condenser.
60. Name two distinct types of storage cells. What precautions are necessary to keep them in good condition?
61. What is meant by the frequency of a generator?
62. If the current is out of phase with the E.M.F. by 90 degrees, how can this be shown?
63. Show a circuit diagram of a motor generator set with a shunt motor and compound wound generator.
64. If the terminals of a helix are connected to a galvanometer and an electromagnet thrust into the helix, will the galvanometer show a reading? If so, why? If not, why?
65. When two or more dry cells are connected together, what is this combination called?
66. Does the air between the plates of a condenser act as an insulator?
67. Who was the first scientist to successfully transmit wireless signals over great distances?
68. If the N pole of a permanent magnet is brought close to the N pole of a second magnet, will they be attracted to each other?
69. State the equivalent of 2 Farad in terms of micro farads.
70. Describe, with the use of a diagram, a logarithmic curve.
71. What does the following formula mean to you,  $\lambda = \frac{v}{f}$ ?
72. Graphically show what is meant by the term Wave Length.
73. What is Inductance?
74. When would you use a soft carbon brush on the commutator of a motor or generator?
75. Name some of the causes of the overheating of a generator.